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AUTHOR Katz, Douglas S.
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ABSTRACT

This is the fourth volume of a four-volume report of Project EDNEED II (Empirical Determination of Nationally Essential Educational Data), conducted from July 1975 to September 1976 to document the extent to which data currently collected by State vocational education agencies could be used to answer vocational education informational needs of users at the national, State, and local levels. This volume focuses on the results of the project's field visits (phase two of the project) to 10 States that were considered to be exemplary in the availability of data on vocational education which corresponded to the informational needs of the various user groups. The field visit results are organized around the 50 highest priority questions identified in the earlier phases of Project EDNEED I and II. (Phase one of EDNEED II involved analyses of all 50 States' vocational education data collection forms, which served as the basis for selecting the States for visitation. Project EDNEED I identified and prioritized vocational education informational needs of users at the national, State, and local levels.) The 50 questions are classified into the following nine topics, with each question including a discussion of different States' alternative approaches to answering the question: Vocational curriculum and instructional characteristics, vocational curriculum expenditures by activities, vocational curriculum expenditures by object, vocational student characteristics, characteristics of the vocational completer/early leaver, local education agency vocational staff member characteristics, local school characteristics, local education agency characteristics, and vocational education characteristics of the State education agency. Problems relating to data aggregation, format, and data element definition are also briefly discussed in this volume. (SH)

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DATA AVAILABILITY IN VOCATIONAL EDUCATION

Volume IV Alternative Procedures for Meeting Informational Needs

Douglas S. Katz

FINAL REPORT VOLUME IV

Project No. 498 AH 50165

"An Assessment of Current Methods of Fulfilling Empirically Determined Educational Information Needs"

Grant No. G00 75 00319

Research Project in Vocational Education
Conducted Under Part C of
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D. S. Katz
John E. S. Lawrence

Project Co-Directors

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CENTER FOR OCCUPATIONAL EDUCATION
North Carolina State University
Post Office Box 5096
Raleigh, North Carolina 27607

1976

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THE CENTER

John K. Coster, Director

The Center for Occupational Education at North Carolina State University at Raleigh is a research and development center established in 1965 under the provisions of the Vocational Education Act of 1963. The Center has been established as an integral unit within the School of Education at North Carolina State University, and its major programs have been supported by contracts and grants with the National Institute of Education and the U. S. Office of Education. The Center has as its mission the provision—through research, development, and related activities—of a continuing contribution to the improvement of occupational education. The major research and development programs of the Center focus on the relationship of occupational education to its context or environment. The frame of reference for occupational education includes its relationship to regional economy, politics, and the employment or work environment. In addition the Center has a capability for flexible action within its overall mission through activities negotiated on a project-by-project basis with contracting agencies.

THE EDNEED SERIES IN VOCATIONAL EDUCATION

The EDNEED (Empirical Determination of Nationally Essential Educational Data) Series published by the Center for Occupational Education, North Carolina State University consists of a five volume final report entitled **Data Needs in Vocational Education** and a four volume final report entitled **Data Availability in Vocational Education.** The former is a product of Project EDNEED I, G. William Porter, Project Director; the latter is a product of EDNEED II, co-directed by Douglas Katz and John E. S. Lawrence. Both EDNEED projects were funded by the U. S. Office of Education, Bureau of Occupational and Adult Education, under Part C Grants.

ADDITIONAL INFORMATION

For additional information regarding the program of the Center, please write to:

Dr. John K. Coster, Director
Center for Occupational Education
North Carolina State University at Raleigh
P. O. Box 5096
Raleigh, North Carolina 27607

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D. S. Katz
John E. S. Lawrence

Project Co-Directors

PROJECT SUMMARY

Project EDNEED was conceived as an important first step toward the development of a basic information system for vocational education. Project EDNEED I (July, 1974 - December, 1975) focused on the identification and prioritization of the vocational education informational needs of users at the national, state and local levels. One product of that effort was a prioritized listing of data questions concerning vocational education which reflected the informational needs at all three levels. Those prioritized questions served as a primary input to the present study.

Project EDNEED II (July, 1975 - September, 1976) was designed to document the extent to which data currently collected by state vocational education agencies could be used to answer the prioritized Project EDNEED I questions. Two approaches were used to achieve this goal. The first phase focused on the gathering and cataloguing of all state vocational education agency data collection forms. Each item of information on a data collection form was classified in relation to the most appropriate Project EDNEED question(s). Subsequent analyses revealed the extent to which the available data corresponded to the informational needs of user groups at the national, state and local levels.

In the second phase of Project EDNEED II, field visits were made to ten states to gather more information on alternative approaches to answering the top-priority Project EDNEED I questions. Preliminary analyses of the states' data collection forms had raised numerous questions concerning the accessibility of the data being collected. The

field visits provided information on the problems that would be encountered in collecting the necessary data and aggregating them to the appropriate levels.

The results of Project EDNEED II are presented in four volumes. In Volume I the informational needs identified in Project EDNEED I are discussed in relation to the data currently available at the state level as indicated by state agency data collection forms. The procedures used to derive and organize the vocational education Data Base are described, and an exemplary core of questions and data elements is presented which represents information that is both highly needed and widely collected. A procedure for empirically selecting alternative sets of questions is also described in detail.

The Data Base that was developed is presented in its entirety in Volume II. Each EDNEED question and corresponding data elements are indexed in terms of relative need and current availability. The index of need reflects the combined ratings of federal, state and local data user groups, with each level receiving equal importance weightings in the analyses.

The state agency data collection forms that were coded and analyzed during the course of the project are listed in Volume III. Each form is categorized by its major subject areas, and a cross-index is included to enable the reader to locate the various states' forms according to content. In addition to documenting all the forms that were included in the Project EDNEED II analyses, Volume III is intended to assist state agencies in locating data collection instruments that might facilitate their own development of forms.

Volume IV presents the results of the field visits to ten states and focuses on the procedures those states would use to answer the 50 highest priority EDNEED questions. Alternative approaches to answering each question are presented, and problems relating to data aggregation, format and data element definitions are discussed.

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INTRODUCTION

Purpose

This is the fourth volume of the Project EDNEED II final report. It focuses on field visits to ten states that were considered to be exemplary in the availability of data on vocational education which corresponded to the informational needs of various national, state and local user groups. Prior analyses of all 50 states' vocational education data collection forms served as the basis for selecting the states for visitation (see Lawrence, 1976). While these analyses resulted in a nationwide representation of the match between informational needs and data availability, they also raised numerous questions concerning the accessibility and comparability of the data being collected by the various states.

The field visits were intended to gather information on (a) the capacity of state agency data systems to answer the 50 highest priority Project EDNEED I questions, (b) alternative approaches for meeting specific informational requirements, and (c) similarities and differences in data-related definitions used by state vocational education agencies (SVEAs). Information was also to be gathered on the problems or difficulties the states would experience in producing answers to the top-priority Project EDNEED questions.

The prior analyses of state agency data collection forms (Volumes I and II of this final report) provided an estimate of the types of data available in each of the 50 SVEAs. However, we were aware that some of the EDNEED questions could be answered using information not

collected on SVEA forms, e.g., narrative proposals, employment service publications, advisory committee reports, community college or vocational-technical institute catalogues, etc. Thus, the estimates of data availability were considered to be conservative. Furthermore, analysis of data collection forms could only document informational inputs; whether or not the data could be retrieved easily or aggregated appropriately remained to be determined.

The states visited were selected on the basis of their apparent ability to answer the 100 highest priority EDNEED questions. It is important to realize that these ten states are not necessarily the most advanced in terms of management information system development, nor are they necessarily collecting more data than the other 40 states. The analyses used for selecting the ten states compared the data they were collecting with the data needed to answer the top 100 EDNEED questions. Given this criterion for selection, the states to be visited were: Florida, Georgia, Illinois, Kentucky, Maryland, Mississippi, Pennsylvania, Washington, West Virginia and Wisconsin.

These ten states differ considerably in their vocational education data acquisition procedures. Some of the states have a centralized vocational education data collection unit, but in most cases two separate agencies are involved in data collection--one for secondary level vocational education programs and another for the postsecondary programs. Data on adult vocational education programs are usually collected by one of these two agencies. In at least one state, however, a separate data collection unit within the Department of Public Instruction is responsible for area vocational-technical schools,

resulting in three data collection units for vocational education within that state. The selection of states for visitation was based on the vocational education data they collected irrespective of program level; thus, some of the states that were visited had very good coverage at one level and relatively limited coverage at another with regard to the Project EDNEED questions.

Procedure

Once the ten states had been identified, contacts were made with the chief state school officers and the state directors of vocational education. The purpose of the EDNEED field visits was explained to them, and permission to interview members of their staffs was requested. The individuals in each state who would need to be interviewed were identified by the state director, and telephone contacts were made with these individuals to set up appointments for the interviews. Each interview lasted from two to five hours, depending upon the number of EDNEED questions which the agency could answer and the complexity of their data collection and processing procedures. The number of people interviewed in each state ranged from one to seven, contingent on the organization of their data collection system(s).

Interviews followed a standardized sequence of questions, prepared by project staff and pilot-tested in the North Carolina Department of Public Instruction. As a result of the pilot test, it was decided to focus on the 50 highest priority EDNEED questions. This decision was based on the amount of time required to document those questions and the anticipated amount of staff time that would be made

available to us in the state agencies to be visited. A total of 30 interviews were eventually conducted.

Many of the state agencies were undergoing changes in their data collection procedures. For the purposes of the EDNEED project, interviewees were asked to respond in terms of their agency's current ability to answer the EDNEED questions. Interviews were conducted between March 29 and April 30, 1976, and, therefore, the following results are based on state agency data collection procedures at that time.

RESULTS

This section presents the results of the Project EDNEED II field visits. It is organized around the 50 highest priority questions identified in the earlier phases of Project EDNEED I and II (see Porter, 1976; Lawrence, 1976). The questions are classified into nine topics: (1) vocational curriculum and instructional characteristics, (2) vocational curriculum expenditures by activities, (3) vocational curriculum expenditures by object, (4) vocational student characteristics, (5) characteristics of the vocational completer/early leaver, (6) local education agency vocational staff member characteristics, (7) local school characteristics, (8) local education agency characteristics, and (9) vocational education characteristics of the state education agency.

Procedural and definitional differences were found both between and within states. The within-state differences result from separate agencies being responsible for secondary and postsecondary vocational education data. These differences will not be reported. Instead, where different approaches were used within a state, the most comprehensive, exemplary or innovative approach will be reported for that state. In this way all of the EDNEED questions will be discussed in the context of ten state agencies.

Topic 1: Vocational Curriculum and Instructional Characteristics

Question 1: How is the curriculum identified within a school? (File 1, Question 1)*

All of the states visited could provide an answer to this question. Six-digit USOE codes were used in nine of the ten states, with the other state using a seven-digit coding system developed by the state vocational education agency. This latter code provides considerably more information than curriculum identification, since it also includes student-based information. The first two digits identify the type of student (e.g., associate degree, apprentice, two-year vocational diploma); the next three digits identify the instructional area (e.g., secretarial science, food manufacturing, automobile servicing); the next digit identifies the curriculum within the instructional area (e.g., court and conference reporting, secretarial science-legal, secretarial science-medical); and the last digit indicates the semester of the student in the program (e.g., first semester, second semester, fourth semester).

In most of the states visited, the assignment of identification codes to curricula is performed by the state agency, typically in conjunction with the state agency approval of the curriculum. In several instances, however, at both the secondary and postsecondary levels, local agency staff assign curriculum codes using guidelines provided by the state agency.

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*File and question identifiers refer to the location of each question in the EDNEED Classification of Information (Drewes, Nerden and Porter, 1976).

Curriculum codes are not the only means by which curricula are identified. Almost all states use curriculum titles as well as USOE codes. However, for data collection and processing purposes, curricula are usually identified by code rather than title. In one state, we were told that the specific title assigned to a curriculum is a local prerogative, and, thus, curricula bearing the same USOE codes can have different titles at the local level.

Information needed to answer this EDNEED question was immediately accessible in all states.

Question 2: What is the approval status of the curriculum? (File 1, Question 4)

Nine of the states visited could answer this question at one or more program levels. In most instances the approval status of a curriculum was either approved or not approved. In two states an additional classification--approval pending--was used. The most comprehensive approval classification included five approval levels based on the occupational orientation of the curriculum: (1) preparation for specified occupations, (2) preparation related to an occupation, (3) occupational orientation, (4) elementary exploration, and (5) not approved. In this state the approval status classification had a direct effect on the level of reimbursement of the curriculum.

Local agencies usually have the option of offering a curriculum without state agency approval, but such curricula are not eligible for state or federal funds. Because of this, state agencies tend to collect much less information on non-approved curricula. In at least two

states we were told that the SVEA could not identify curricula which were being operated without state approval.

In the nine states where this EDNEED question could be answered, the necessary information was immediately accessible. Typically, this information was presented in a document listing all approved curricula by institution. However, in some instances the location of the curricula could not be determined below the LEA level, i.e., the schools offering the curricula could not be identified.

Question 3: What is the approval agency for the curriculum? (File 1, Question 5)

In nine states the state vocational education agency is responsible for approving curricula. State policy in the tenth state makes curriculum approval a responsibility of the local administrative unit.

This EDNEED question could be answered in all ten states. The necessary information was immediately available, since it is based on state policy rather than collected data.

Question 4: What is the time schedule for the curriculum? (File 1, Question 6)

This question could be answered in each of the ten states, although different types of data would be used to answer the question. Some states would answer this question in terms of the starting and ending dates of the curriculum; others would report total contact hours of instruction; others would report the contact hours required for completion; and others would report the class periods the curriculum was offered. In a few states this question could be answered in several ways, e.g., starting and ending dates, days per week, total hours of

instruction, total hours of lab work, etc. In one state the answer would have to be derived by multiplying the credit hours by 250 minutes to determine the weekly minutes of instruction.

Eight states reported that the data needed to answer this question were immediately accessible, while two states reported that it would require moderate effort to access the data for any particular curriculum.

Question 5: What are the entrance requirements for the curriculum? (File 1, Question 7)

Only five of the ten states could answer this question at one or more program levels. Two of these agencies reported that they would refer to school or community college catalogs to obtain the necessary information; two would refer to the narrative description of entrance requirements contained in the program proposal; and the other state required the local agencies to indicate, with a check mark, whether the curriculum entrance requirements included prerequisite courses, aptitude test standards, a minimum grade point, a required grade level, or other prerequisites which were to be specified.

The general response to this EDNEED question was that there were few entrance requirements for vocational curricula, and those that existed were largely a local prerogative. Local curriculum entrance requirements, such as prerequisite courses, were not seen by state agency personnel as being necessary to collect information on in at least half of the states visited. Finally, the narrative descriptions on entrance requirements that were being collected do not appear to be suitable for aggregation, by curriculum, in any of the states that collected such narrative information.

Question 6: What are the completion requirements for the curriculum? (File 1, Question 8)

Only one state agency could differentiate curricula by their completion requirements, and it would do so by listing the courses and course hours required for curriculum completion. Two other state agencies could identify courses required for completion of various vocational programs but could not differentiate the requirements of the curricula within programs. In several states we were told that completion requirements for secondary level vocational curricula are the same as for non-vocational programs and are stated in terms of a minimum number of hours of instruction.

It must be kept in mind that we are referring to data within state agencies that pertain to curriculum completion requirements; several agencies could answer the question by contacting the schools. However, at the time of the field visits, only one state agency routinely collected data on completion requirements by curricula.

Finally, in five states we were told that the current trend was to place greater emphasis on competency or performance-based completion requirements and less emphasis on hours of instruction. To some extent these competencies are reflected in the performance objectives contained in proposals for new curricula, but they are usually stated as objectives rather than rigid requirements.

Question 7: What credentials are granted in recognition of completion of the curriculum? File 1, Question 9)

The capability of state agencies to answer this question differed primarily by program level. At the secondary level, none of the

state agencies collected data which would indicate whether graduates received anything other than a high school diploma. It was noted that some secondary schools might also give program completers a certificate of completion, but information on this was not available at the state level.

At the postsecondary level, several state agencies could identify the specific type of degree, diploma or certificate that would result from successful completion of a curriculum, but in some states this information was available only at the local institutions. In one state which could answer this EDNEED question at the postsecondary level, we were provided with a listing of all approved curricula. For each curriculum the credential (Associate Degree, Vocational Diploma less than one year, Vocational Diploma one year, and Vocational Diploma two years) and offering institutions were listed. Furthermore, two separate listings were given to present this information by both credentials and institutions. In another state, graduates of competency-based programs are given computer printouts listing their specific occupational skills. These printouts are intended to assist them in showing potential employers their job-related skills and are not, therefore, credentials.

Question 8: What are the planned instructional terminal student outcomes for the curriculum? (File 1, Question 10)

Six of the ten states collected information which could be used to answer this EDNEED question. The information was usually contained in proposals for new vocational programs/curricula and was generally

in a narrative format. In one state there were standardized terminal student outcomes for each vocational education curricular offering. These outcomes, stated as specific skills and performance criteria, served as the basis for program and curriculum evaluation. In another state, standardized goals were developed by consensus for each postsecondary vocational program, but they did not differ by curricula within programs.

New curricular offerings were most likely to be documented in terms of planned instructional student outcomes. This appears to reflect more stringent state agency requirements for the approval of new programs or curricula. The instructions for writing a program proposal in one state, for example, require the local agency to ". . . include specific job tasks or occupational proficiencies graduates will be able to perform." However, since this type of information is in a narrative format, it is not very suitable for aggregation by USOE program codes. More specifically, in several states we were told that it would be relatively easy to access the data on terminal student outcomes for any particular curriculum, but it would be quite difficult to provide the same type of information for all curricula sharing the same program code.

Question 9: What is the structure of the curriculum? (File 1, Question 11)

The structure of a curriculum refers to the relationships between the components, courses or instructional units comprising it. For example, the EDNEED Lexicon lists such components as separate courses with discrete subjects, separate courses with correlated

subjects or areas, integrated clusters in which subject matter area boundaries are flexible, etc. The structure is, thus, more than a listing of courses; it also reflects the relationships between courses or course content.

In response to being asked this EDNEED question, several state agencies told us that they could identify the courses comprising a curriculum but could not determine how the courses were related. In a few instances, information contained in program proposals was said to be adequate for answering this EDNEED question. However, this information is almost always narrative in format and varies considerably in the required level of specificity. In one state, for example, instructions for completing an application for a new program ask for evidence showing "how the program of instruction combines and coordinates related instruction with occupational content, or prepares the individual to enroll in an occupational program."

In no state did we find curricula classified into discrete structural categories similar to those cited in the EDNEED Lexicon. Nor was the available information on curriculum structure stored in a computer-accessible format. Nevertheless, the information that would be used to answer this question was generally considered by agency personnel to be immediately accessible.

Question 10: Where is the location of the instruction? (File 1, Question 16)

This question could be answered in each of the ten states, and in almost every case it could be answered for both secondary and postsecondary programs. For on-campus instruction, some state agencies

could identify the school, building and room number where the instruction was offered; in other states only the name and address of the school were identifiable. In those instances where instruction was provided off campus, about half the states could identify the off-campus location.

States that could answer this EDNEED question could generally do so for all vocational programs and curricula. However, in one state the information on off-campus instruction was available only on cooperative education programs; in another state it was not available on health programs located in hospitals. For the most part, the information needed to answer this EDNEED question was immediately accessible.

Question 11: What persons or groups are involved in evaluation and/or curriculum improvement? (File 1, Question 17)

In eight states information was collected which could be used to answer this question, but the types and specificity of the information varied considerably. Three state agencies would answer the question with information on local advisory committees. This information ranged from the names, addresses and occupations of committee members to simply the occupational representation on the advisory committee.

In three other states the answer would identify the state agency personnel who were responsible for program evaluation, and in one of these states they could also identify the local staff who participated in the evaluation. However, in this latter case the evaluations were of the entire vocational program in a school district, and, thus, the answer would not differ by curricula within the district.

One state agency would use teachers' self-evaluation reports to answer this question, while in another state the individuals signing the annual follow-up reports would be identified as the persons involved in curriculum evaluation. Finally, two state agencies indicated that they did not collect the information needed to answer this EDNEED question, but the data were available at the local level and could be obtained if necessary.

Question 12: What aspects of instructional and supporting services are evaluated? (File 1, Question 20)

Several states could provide answers to this question. Like many of the other EDNEED questions, the states differed in their approaches to answering this question. One state agency collected information only on facility evaluations. Two state agencies collected narrative information on local plans for evaluating programs but did not collect the results of those evaluations. In one of these states, for example, the guidelines for preparing a local district plan for vocational education ask the applicant, "How do you plan to evaluate the occupational program?" In another state the results of local evaluations are sent to the state agency for review.

State agency personnel in four of the states conduct periodic on-site evaluations, usually covering about 20 percent of the vocational programs each year. These evaluations were described as being comprehensive; in one state, for example, a 37-page interview guide and check list are used by the evaluators. However, since only a portion of the programs are evaluated each year, the recency of the available data can

vary from one to five years. Thus, while these four states can identify the aspects of instructional and supporting services evaluated, they would not be able to provide up-to-date evaluative information on most of their program offerings.

Question 13: What are the related occupations for which training is provided in the curriculum? (File 1, Question 21)

Five of the ten states could provide some type of answer to this question, although in some of these states the related occupations are identified at the state level rather than by the school offering the curriculum. More specifically, three of these five states identify related occupations by converting USOE program codes (usually six digits) to DOT occupations. Only one of these three states also has the schools identify the related occupations by name.

One state had information on related occupations at the program level but did not differentiate curricula within program areas. In another state local applications for new programs or curricula must ". . . include specific job tasks or occupational proficiencies graduates will be able to perform." In still another state, the proposal for new programs asks the applicant to "briefly describe the student potential, job opportunities, and procedures used to establish a need for this program." Five lines are provided for the answer.

The five states that did not collect information which could be used to answer this question did have curricula identified by USOE codes. Conceivably, these codes could be transformed to DOT codes, as was the procedure in other states. However, this procedure assumes

there is a clear-cut matching between educational codes and occupations, which is not always the case. This is pointed out in the Bureau of Labor Statistics publication Matching Occupational Classifications to Vocational Education Program Codes (DOL, 1975, p. 1), which states, "In short, the problem is that the cluster of jobs in an instructional program frequently differs from the cluster of jobs under an occupational heading." For example, the USOE instructional code 17.0901 refers to photographic laboratory and darkroom occupations. The occupations listed as being related to this program include developer, photographic retoucher, photographic finisher I, and office machine operators not elsewhere classified. An earlier publication, Vocational Education and Occupations, listed over 40 occupations as being related to this instructional program, including such occupations as sound and laboratory engineer, photographic sensitometrist, X-ray developing machine operator, and print inspector.

In summary, less than half the states visited collected information on the specific occupations related to each curriculum. The usual procedure was to transform USOE program codes to occupational codes at the state level.

Question 14: What is the source(s) of funding for the curriculum? (File 1, Question 22)

The sources of funding referred to in this EDNEED question are federal, state and local. None of the states visited collected information at the curriculum level which classified funds into these three categories. In a few states the amount of federal and state funds supporting a curriculum could be determined, but not the local funds.

In some other states the sources of funds could be identified at the program level but not at the curriculum level. In one state the amount of federal, state and local funds could be identified at the curriculum level for new federally funded projects, but it was estimated that these projects accounted for approximately two percent of the curricula.

It appears that the accounting procedures being used in all of the states visited would have to be modified to answer this EDNEED question. This would require additional information on the allocation of local funds and the maintenance of accounts by curriculum.

Question 15: What is the type of funding allocated to the curriculum from the Vocational Education Act? (File 1, Question 23)

Funding allocations at the curriculum level presented a problem in most of the states visited. Several of the states allocate VEA funds on a project basis, and where a project consisted of a single curriculum they could answer this EDNEED question. However, in most instances the states could not determine VEA funding allocations below the program level.

In only one state were we told that this question could be readily answered. In this state, Part B VEA funds were distributed by formula to curricula within LEAs. The type and amount of VEA funds allocated to a curriculum could be determined as long as there were not two curricula with the same six-digit USOE code within the LEA. If two such curricula existed, the state agency could not identify the distribution of VEA funds between them. Funds under other parts of the VEA were allocated by contract for specific purposes, and the extent to

which they were to be used to support a curriculum could be determined by the terms of the contract.

Question 16: What are the curriculum expenditures? (File 1, Question 24)

Total expenditures, classified by curriculum, were identifiable in one of the state agencies visited. This state agency collected data on operating costs classified by course (see Topic 7, Question 9). By aggregating these data up to the curriculum level, the expenditures by curriculum could be determined. In three other states, we were told that total expenditures could be determined at the program level but not by curriculum. In the remaining states, expenditures could not be identified below the LEA or school levels. Two states could identify instructional salaries by curriculum but could not do the same for supplies and materials, equipment, travel, etc.

Exceptions to the above were noted in several states. For example, in some states, when a curriculum was funded as a special project, the total expenditures would be known. Furthermore, these expenditures would be itemized by both source of funds and types of services or materials purchased. This information, however, was available on only a very small percentage of the curricula.

Question 17: What is the curriculum enrollment? (File 1, Question 26)

This question could be answered in each of the ten states and usually for both secondary and postsecondary curriculum levels. In one state where enrollment data are collected by course, we were told that an answer to this question at the curriculum level would reflect a

duplicated head count. Since enrollment data are collected by course in several of the other states, a similar problem might also be encountered elsewhere. This problem appears to be avoidable in states with student-based management information systems, and we were specifically told so in one such state that collects enrollment data by course.

Duplicated head counts and inflated curriculum enrollment figures can result from summing course enrollments to arrive at curriculum enrollments. States which collect enrollment data by course but which also have student identifiers in their information system can avoid this problem by accessing the student files to determine each student's curriculum. Enrollments by curriculum can thereby be determined without duplicated head counts. One state that would use such a procedure to answer this EDNEED question could also describe curriculum enrollments in terms of sex, race, grade level, and career plans.

Another problem mentioned in one state relates to the definition of curriculum enrollment. It was pointed out that the state agency could enumerate the number of students enrolled in courses within a curriculum but could not tell if the students are pursuing a vocational goal or just taking the course because of their interest in the subject matter.

Question 18: What are the post-school outcomes of curriculum completers/early leavers? (File 1, Question 27)

All ten states collected information which could be used to answer this EDNEED question. In six states the state agency collected

individual follow-up information; in the other four states follow-up data were collected at the local level and sent to the state agency in summarized form. The summarized data, in almost every instance, covered considerably fewer topics than individualized follow-up data collected by state agencies. At the minimum, the summarized data related only to the information required for USOE reporting purposes. The five outcomes listed on one such form included the number of former students, classified by curriculum, who were (1) not available for job placement and planning to continue education at a higher level, (2) not available for placement for other reasons, (3) working full-time in the field trained for or a related field, (4) not placed and seeking work, and (5) placed in an unrelated field. It is worth noting that these reporting categories, which are identical to those used by USOE, do not provide for the possibility of working part-time in the field trained for or a related field.

Individualized student follow-up data collected by state agencies frequently cover both post-school outcomes and the former students' assessments of their vocational preparation. One of the most comprehensive follow-up questionnaires used in these states is a five-page, 50-item machine-readable instrument. The first page was completed by students prior to graduation. The other four pages focused on the graduates' employment, post-high school education, and views concerning the quality and relevance of their high school education.

State agencies with individualized follow-up data can make numerous comparisons that are not possible with summarized data submitted by local education agencies. For example, wage rates can be compared

between any number of subsets of students drawn from either within or across curricula. Individualized data are also suitable for sensitive statistical analyses that cannot be validly performed on summarized or aggregated data. In one state with individualized student outcome data, we were told that the state agency frequently performs special analyses or tabulations in response to requests from the local schools. In this way the local agencies see a direct benefit for assisting in the data collection process.

Question 19: What staff are assigned to the curriculum? (File 1, Question 28)

This question could be answered in each of the ten states and usually at both the secondary and postsecondary levels. Staff are typically identified by both name and Social Security number. Several state agencies also collected data on the percentage of time or the hours per week/year staff members devote to each curriculum. In four of the ten states the assignment of instructional staff could be determined at the course level as well as the curriculum level.

Most of the state agencies indicated that the information needed to answer this EDNEED question was immediately available. Three agencies said it would take approximately a week to access the necessary data, and in one state it would take more than a week to access this information. In the latter case, the reason given for the difficulty in accessing the data was that their agency records list courses by instructors rather than instructors by courses or curriculum. Thus, to identify the staff assigned to a particular curriculum would require a search of the courses being taught by each instructor in each institution offering the curriculum.

Topic 2: Vocational Curriculum Expenditures by Activities

Question 1: What are the expenditures for instructional activities allocated to the curriculum? (File 2, Question 2)

Four of the ten states collected information which could be used to answer this question. Three of these states collected instructional expenditure data at the course level and would aggregate up to the curriculum level to determine the answer. The other state collected the necessary data at the curriculum level.

Teachers' salaries were the only expenditure that would be used to answer this EDNEED question in three of the four states. Other expenditures related to instructional activities were not identifiable at the curriculum level in these three states.

States that could not answer this question at the curriculum level could identify expenditures for instructional activities--usually salaries--at a higher level of aggregation. In some states such data on instructional expenditures were available by major program areas within schools, while in a few states the relevant data were available only in aggregated form at the school district level.

Question 2: What are the expenditures for instructional support services activities allocated to the curriculum? (File 2, Question 4)

Only one of the states visited routinely collected data which could be used to answer this question at the curriculum level. This state classified instructional expenditures into two categories: "Instructional Personnel Expenditures" and "Other Instructional

Expenditures." Expenditures were reported for each course in terms of costs per student credit hour. Since information on semester credit for the course and student enrollment was also provided, the total course expenditures for instructional support services could be computed. Curriculum expenditures for these services could then be obtained by summing the totals for each course within the curriculum.

In another state, information was available on the expenditure of federal funds for curriculum instructional support services, and in several states information was collected on expenditures for instructional support services for each major program area. For example, in one state expenditures were reported on guidance and counseling services, teacher education, and media activities for each of the school's vocational program areas. The most global answer to this question was in a state which collected total county-wide expenditures for instructional support services.

Question 3: What are the expenditures for administrative support services allocated to the curriculum? (File 2, Question 5)

None of the states visited collected information, classified by curriculum, on expenditures for administrative support services. In one state "college wide expenditures," which included administrative support services, were prorated to each course in terms of cost per student credit hour. In another state expenditures for administrative support services were reported on all federally funded projects, which in some cases were curricula. Two states collected administrative expenditure data classified by major program areas, while in other states the data were reported by school, school district or county.

Topic 3: Vocational Curriculum Expenditures by Object

Question 1: What are the expenditures for salaries allocated to the curriculum? (File 4, Question 2)

Four of the ten states collected information which could be used to answer this EDNEED question at the curriculum level. The other states could identify expenditures for salaries, but at a level of aggregation above curriculum (e.g., program area, total school program, LEA).

As might be expected, teachers' salaries were the most readily identifiable curriculum salary expenditure. In some states the curriculum expenditures for instructional salaries would be identified by the state agency through the summation of the salaries of individual teachers assigned to a curriculum. In one state, for example, the name, Social Security number, school unit, curriculum assignment, annual salary, and position classification for all personnel servicing vocational and technical programs are collected using a single form. A computerized sorting of these data by school code and then by curriculum within schools would produce the instructional salaries by curriculum. However, in those instances where an instructor was assigned to two or more curricula, his time distribution across curricula (and the related expenditures) could not always be determined. One state avoided this potential problem by collecting data on teachers' salaries and the courses they taught. In this way they could aggregate up to the curriculum level.

Non-instructional expenditures for salaries are not generally allocated to curricula. The salaries of vocational supervisors, department heads or vocational coordinators are, therefore, not likely to be included in the states' answers to this EDNEED question.

Question 2: What are the expenditures for supplies and materials allocated to the curriculum? (File 4, Question 5)

Only one state reported that they could identify, by curriculum, expenditures for supplies and materials; in the other states these expenditures were reported to the state agency as aggregated data, generally classified by program area or school. For the state which could answer this question, each curriculum within a school was identified by a six-digit USOE code. Costs for the curriculum were listed under six categories: instructional salaries (with instructors identified by name); fixed costs (Social Security, Workmen's Compensation, retirement, etc.); instructional supplies; subtotal for salaries, fixed costs and instructional supplies; travel; and equipment.

In those states that did not usually collect data on expenditures for supplies by curriculum, there were some exceptions. In one state, for example, expenditures for supplies and materials could be identified for those curricula which used federal vocational education funds to pay for the costs. In another state, data were collected on expenditures for supplies by course for those courses supported by CETA funds. However, in most instances expenditures for supplies and materials were not identifiable at the curriculum level.

Question 3: What are the expenditures for equipment allocated to the curriculum? (File 4, Question 7)

Two of the ten states routinely collected data on equipment expenditures classified by curriculum. Both states used separate forms to request and substantiate the expenditure of state or federal funds for equipment purchases. In one state the forms identified the LEA, school, program level, and curriculum (by both title and USOE code). The equipment purchase was described in terms of whether it was for a new curriculum, to replace existing equipment, or to add equipment to a continuing curriculum. Each piece of equipment was described by the name of the item, the quantity purchased, the unit price, and the total price.

The other state that collected equipment expenditure data classified by curriculum used a form which identified the curriculum by both title and program area (e.g., agriculture, distribution, health, etc.). However, when the data on this form were keypunched, the title of the curriculum was skipped but the program area was punched in. Thus, while this state agency collected the data needed to answer this EDNEED question, it would require a manual search of the forms to identify the specific curriculum.

Other states collected data on equipment expenditures which were classified by major program area, school, or district. In some instances the type of equipment was identified; in other states it was not. As an example of the latter, in one state the form submitted to the state agency asked LEAs to report all equipment-related vocational education expenditures classified as follows: (1) major equipment

purchases ($200 or more per unit); (2) minor equipment purchases (under $200 per unit); (3) equipment rental; and (4) equipment repairs and maintenance.

In summary, most of the states did not collect equipment expenditure data classified by curriculum. Expenditure data are aggregated at various levels across states, and the equipment purchased cannot always be identified by the state agencies.

Topic 4: Vocational Student Characteristics

Question 1: What is the sex of the student? (File 5, Question 2)

Six of the ten states collected data on individual students. In each of these states the sex of the students could be identified. In the other four states data were submitted to the state agency in aggregated form, precluding the identification of sex by student.

Two different approaches were used to collect data on individual students. In four states a form is completed for each student, giving his name and/or Social Security number, curriculum or program, sex, race, address, etc. In the two other states which could answer this EDNEED question, information is collected on classes, with each student in the class identified by name, sex, race, address, etc.

The four states which used separate forms for each student collected the data in machine-readable format. In three of these states the forms were completed by the students; in the other state the information was submitted to the state agency on computer cards punched by the schools.

Question 2: What is the cultural handicap(s) of the student? (File 5, Question 8)

Several of the states could identify students who were classified as disadvantaged, but only two states collected information on the specific type of cultural handicap. One of these states had a form to be completed for each student who was classified as disadvantaged or handicapped; the other state used a class roster of students with a column for indicating one of seven disadvantaged conditions.

In the state which used a separate form for students classified as disadvantaged or handicapped, 15 categories of socioeconomic, biographic and other relevant information were solicited. These categories included referral source (e.g., community action program, United Migrant Opportunity, etc.), race, Spanish surname, educational level completed, type of physical or psychological handicap, work status, number of dependents, monthly family income, type of public assistance, and number of years on public assistance. Each student was identified by both name and Social Security number.

The other state's form allowed for seven categories of disadvantaged conditions: academic, socioeconomic, cultural or linguistic isolation, correctional institution parolee, juvenile delinquent, migrant, and other. It appears from the form that for any individual student, only one of these categories could be selected because of space limitations on the class roster. Since the categories are not mutually exclusive, this space limitation arbitrarily restricts the collection of data on the students' cultural handicaps.

Question 3: What is the physical handicap(s) of the student? (File 5, Question 9)

Like the preceding EDNEED question, several states could identify students who were classified as handicapped, but only three could determine the type of physical handicap. Two of these states collected the data on class rosters, while the third used a separate form for each handicapped student. In all cases there were fewer than ten types of handicaps for which codes existed, and there was considerable similarity in the three states' categories.

All three states used the following categories: hard of hearing, deaf, speech impairment, visually handicapped, emotionally disturbed, and other. Two states had the additional categories of crippled, health impaired, and mentally retarded; the third state differentiated between mentally retarded-educable and mentally retarded-trainable. The categories which were used by only one state were blind and physically handicapped.

Both of the states which used class rosters to collect data on handicapped students provided enough space on the form for encoding only one handicap per student; students with multiple handicaps could not, therefore, be identified. However, considering that most of the states visited could not identify any student's handicap, the exclusion of multiple handicaps is relatively inconsequential.

Question 4: In what curriculum is the student currently enrolled? (File 5, Question 16)

Six of the ten states could identify the curriculum a student was enrolled in. These are the same six states that could answer the first question in this section. These states collect data on individual students, whereas the other four states collect student-related data in aggregated form.

There are two basic approaches used to collect the data needed to answer this EDNEED question: (1) use a student-based form, usually completed by the students or (2) use a class- or course-based form, usually completed by the instructor. Four of the six states which could answer this question would use student-based data collection forms. For each student there is a single form, and on each form the

student's curriculum is identified. This information is all that is needed to (a) identify the student's curriculum and (b) determine enrollments by curriculum.

Class-based forms were used in the other two states. On neither form is the students' curriculum explicitly indicated, but it is inferred from the course in which they are enrolled. Therefore, to answer this EDNEED question, these two states would assume that all students enrolled in a particular vocational course would be enrolled in the same curriculum. To identify more positively a student's curriculum, a search would have to be made across class rosters to determine all the vocational courses the student was taking or had taken. For this reason, the student-based forms appear to provide a more definitive answer to this EDNEED question.

Question 5: What is the student's full-time/ part-time status? (File 5, Question 18)

Six of the ten states could determine whether a student was enrolled in a vocational program on a full-time or part-time basis. The simplest procedure involved a question on a student-based enrollment data form on which the student was asked to indicate whether he was carrying a full-time or part-time course load. No specific definitions of full-time or part-time were provided in the instructions for completing this form. A similar procedure was used in another state, but the form was completed by a school staff member. The other four states vary considerably in the types of data they would use to answer this EDNEED question.

A student-based form in one state asked the student to indicate the number of contact hours per week he was currently taking. The contact hours would be used in this state to determine a student's full-time/part-time status. In another state, the student record form asked the student to indicate the number of minutes per period and the number of periods per week he spends in his vocational program. Thus, like the preceding state, contact hours would be used to determine a student's full-time/part-time status.

The two other states would use course enrollment data to answer this EDNEED question. In one of these states, a student enrollment form is completed for each student. On this form the courses the student is currently taking are identified, and the number of courses a student is enrolled in would be used to determine his full-time/part-time status. In the other state class-based forms would be used to answer this question. To determine a student's status a search would be made of the class rosters to determine how many courses the student was enrolled in. While this is a much more complex procedure than that used in the preceding state, the resultant information is essentially the same, and the number of courses a student is enrolled in would be used to answer this EDNEED question.

In summary, three different types of information would be used by the states visited to determine a student's full-time/part-time status. The first and least quantitative approach asked the student or the school to indicate whether the student was carrying a full-time or part-time course load. The second approach would use contact hours per week to determine a student's full-time/part-time status. Finally,

the third approach would answer this EDNEED question on the basis of the number of courses in which the student was currently enrolled.

Question 6: What are the characteristics of the student completers/early leavers? (File 5, Question 22)

The thrust of this EDNEED question is on the curriculum completion status of former students, not their personal characteristics. Six states collected data on individual students which, at a minimum, indicated whether or not they had completed the curriculum in which they were last enrolled. In three states the data were collected on student-based forms; in the other three states course-based forms were used.

The least comprehensive completion data were collected as a yes/no response to the question, "Graduated from program?" However, most of the states which collected data on individual students' completion status provided seven or more termination alternatives. For example, one state listed the following alternatives on their student termination and change of status form: (1) graduated-completed vocational program, (2) graduated-did not complete vocational program, (3) in school-completed vocational program, (4) in school-withdrew from program, (5) transferred to another school, (6) dropped out of school, (7) death, (8) transferred to another program, and (9) other. This particular form also collected information on the student's skill status upon termination (i.e., left with employable skills, left without employable skills) and the reason for termination if the student left prior to completion (e.g., illness, moved from area, insufficient income, pregnancy, entered armed services, marriage, etc.).

The student termination form in another state collected essentially all of the information described above as well as a teacher evaluation of the student's performance upon termination. In that section the teacher was asked to rate the student on 13 factors such as the quality of work, the quantity of work, ability to operate equipment, willingness to accept responsibility, punctuality, etc.

Other items which were included on student termination forms included the date of termination, job placement data, current educational status, duration of attendance, and course completion status. In general, states that could answer this EDNEED question collected data on a variety of factors related to the student's termination.

Question 7: What are the student's educational and career intentions? (File 5, Question 24)

Only two states collected information on what students intended to do after they completed their vocational program. One of these states collected this information on their student basic enrollment data form; the other collected it just prior to graduation on their pre-follow-up questionnaire. In the former case, only one question was asked of the students: "What do you plan for your first year after high school?" Seven alternatives were listed: (1) no firm plans at this time, (2) work in field of study, (3) work in different field, (4) attend college/university, (5) attend school (not college), (6) enter military service, and (7) marriage/home career.

The pre-follow-up questionnaire contained five questions which related to the students' career or educational plans and the efforts they had made to actualize those plans. The first of these questions

asked, "What are your plans immediately after graduation?" The response alternatives were: (1) full-time employment, (2) full-time education, (3) part-time employment, (4) part-time education, (5) military service, and (6) other. The remaining four questions focused on the student's progress toward achieving his immediate goal: (1) Have you applied for a job after graduation? (2) Are you employed or been promised employment? (3) Have you applied for admission to a school? (4) Have you been accepted at a school? Each question had the same three response alternatives: (1) Yes, full-time; (2) Yes, part-time; and (3) No. It should be noted that this pre-follow-up questionnaire was completed by both vocational and non-vocational students.

Both of these states used machine-readable forms for collecting the above information.

Topic 5: Characteristics of the Vocational Completer/Early Leaver

Question 1: What is the current employment status of the completer/early leaver? (File 6, Question 3)

To answer this question, it is necessary for a state agency to collect individualized (non-aggregated) follow-up data, and six of the ten states collected such data. In four states the data collection forms were completed by students; in the other two states they were completed by teachers, counselors or other school staff members.

The four forms to be completed by students varied in their questions and response alternatives dealing with current employment status. Full-time employment, for example, was not defined on one form, was defined as 35 or more hours per week on another, and was defined as 30 or more hours per week on a third form. The fourth state asked the student to indicate the number of hours he worked during an average week. On one form the instructions told the former student to mark only one box to indicate his present status, but the alternatives were not mutually exclusive (e.g., employed part-time; college part-time; unemployed, not looking for work; homemaker full-time). In another state an almost identical question was asked, but the student was told to check all appropriate items. Perhaps the least ambiguous and most informative of the approaches is the one which asked four straightforward questions: (1) Are you employed? (2) How many hours do you work during an average week? (3) Are you currently seeking employment? (4) Are you available for employment? The response alternatives to this last question were: (a) Yes, (b) No, employed, (c) No, attending school, (d) No, no related jobs in the area, and (e) No, other.

The amount of information contained in the forms completed by teachers was rather limited compared to the student-completed questionnaires. On one form the employment status alternatives were: (1) status unknown, (2) not available for placement-continuing education, (3) not available for placement-other, (4) employed in the field for which trained or a related field, (5) other employment, (6) unemployed, seeking work. No distinction was made between full- and part-time employment. In the other state the employment status alternatives were: (1) status unknown, (2) not available for employment-continuing education, (3) not available for employment-other reasons, (4) employed full-time in related job, and (5) other employment. The reader should note that in this particular state the status "unemployed" is not an alternative, nor are instructions provided to the teachers to tell them how to classify unemployed students. The instructions read, "Complete items 38 through 42 by placing an 'X' in the column which best describes the student's status five months after the end of class." It appears impossible for the resultant data to show anything other than a 100 percent employment rate.

Question 2: How related is the current employment to the occupation trained for? (File 6, Question 5)

Information needed to answer this EDNEED question on an individual student basis was collected on the same forms used to answer the preceding question. Thus, in four states the forms were completed by students and in two states they were completed by teachers or other school staff. Four states could not answer this question.

The follow-up forms to be completed by students all contained a question on the relationship between the student's current job and his vocational training. Two forms allowed for a yes/no answer to the question, "Is your present job related to your vocational education program?" In another state there were three response alternatives: (1) One for which you were trained, (2) Related to your training, and (3) Not related to your training. The other state's form provided four response alternatives: (1) Same occupation studied, (2) Highly related, (3) Only slightly related, and (4) Completely unrelated. Three of these states asked the students to give the title of their current job, and in the other state the students were asked to code their occupational area using a list of 151 six-digit USOE program codes.

Neither of the states that had teachers complete the forms collected information c[illegible] specific jobs the former students held. As was noted in the preceding question, one of these states' forms contained two alternatives: "Employed full-time, related job" and "Other employment." No provision was made for part-time employment in a related job. The other state also had two alternatives on its form: "Employed in the field for which trained or a related field" and "Other employment." Thus, the amount of information contained in the forms completed by teachers is much more general than the questions asked of students, and since the teachers do not report the title of the student's job, there is no way of verifying the relatedness of the employment to training.

Topic 6: Local Education Agency Vocational Staff Member Characteristics

Question 1: What is the work experience(s) outside of education of the local vocational education staff member? (File 7, Question 5)

Eight of the ten states collected information on vocational teachers' work experiences outside of education. This information was usually collected in conjunction with applications for teacher certification, and in some states it was collected only when the instructor initially applied for certification. In three of these eight states, a single item on the form dealt with work experience outside of education: in two of them the item asked for the number of years of non-teaching work experience in the occupational area, and the other state asked for the latest year of business or industrial experience.

Five states could provide rather detailed answers to this EDNEED question. Each of these states' forms asked the teacher to identify his/her former employers by name and address, the specific date of their non-teaching employment, and their job title or position. Two states also asked the applicant to list his/her salary for each job. In addition to the preceding information, the most comprehensive form also asked the applicant to identify his immediate supervisor for each job, list in detail specific duties for each position held, give the length of time in each position, indicate the number of hours worked per week if less than full-time, and give the starting and ending salaries. Applicants were asked to record all post-high school employment and to account for any gaps in their employment record.

Topic 7: Local School Characteristics

Question 1: How is the school identified? (File 9, Question 1)

All of the states had numeric codes for identifying schools, and for data collection purposes, schools would frequently be identified by both code and name. In some instances the codes were arbitrarily assigned, while in others the codes indicated the county, geographic area and school district. The seven-digit code used in one state, for example, identified the LEA and school and was linked to SMSA, county and congressional district. Codes were assigned to all public and private schools in the state offering vocational education. This coding system enabled the state agency to present the results of computerized data-processing by school, LEA, county, SMSA, or congressional district.

Question 2: What are the characteristics of the geographic area in which the school is located? (File 9, Question 2)

All of the states could provide some information on the characteristics of the geographic area served by a school, but there was considerable variation in the types of information, its source, and the extent to which data were available for all schools or school districts in a state. In one of the smaller states, for example, "personal knowledge" of agency staff was considered to be sufficient to answer this EDNEED question. Several states relied on data from the State Department of Commerce; a few had census reports, and one state agency used tax information to determine the relevant wealth of school districts. Two states specifically cited their Employment Security Commission as a source of the data they would use to answer this question.

Since much of the relevant information was contained in publications put out by other state agencies, the geographic coverage was not likely to be by school or school district; it was more likely to be by county or SMSA. However, in two states school districts were coterminous with counties, which apparently increased the utility of data published by other state agencies.

Local plans for vocational education were also cited as a source of data for answering this EDNEED question, and one state agency would refer to proposals for new programs to determine local characteristics. In this latter instance, it was noted that only a limited number of schools would be covered by the available data.

In brief, there appears to be little consistency in the sources of data the ten states would use to answer this EDNEED question. Many of the data that would be used were published by other state agencies, and they were not, therefore, tailored to the geographic area served by the school.

Question 3: What is the type of school organization by grade level? (File 9, Question 3)

One or more state agencies in each of the ten states could answer this EDNEED question. The necessary data were usually immediately available and were likely to be published in a state school directory. In two states the school code indicated the grade levels of the school, but the information was also available in the state school directory.

Question 4: What are the school's vocational curricular offerings? (File 9, Question 11)

One or more state agencies in each of the ten states could answer this EDNEED question. At the postsecondary level college catalogs were most frequently cited as the source of information. At the secondary level curriculum approval forms and class rosters were most likely to be used to obtain the necessary data. Two state agencies could identify only a school's approved curricular offerings. One state had a prepared listing of curricula by school and schools by curricular offerings. Another state agency said they collected the necessary information but would have to reprogram their computer to identify curricula by school.

Question 5: What are the characteristics of the students served by the school? (File 9, Question 12)

This EDNEED question focused on aggregate characteristics rather than individual student characteristics (see Topic 4). It is a general question which can be answered in a variety of ways, e.g., program enrollments, dropout rates, average daily attendance, male/female distribution, etc. Only one state agency could not provide an answer to this EDNEED question; the data it received were aggregated at the school district level. All of the other state agencies could identify vocational enrollments by full-time equivalency, average daily membership, average daily attendance, or unduplicated head counts. Several states collected vocational enrollment data classified by sex and race.

By aggregating upward, states that had individual student-based records could identify student characteristics on a school-wide basis.

Six states collected data on individual students, and rather than repeat the types of data they collect here, the reader is referred to Topic 4.

Question 6: What is the amount of school funding for vocational education by source? (File 9, Question 22)

Only one state could itemize, by school, the amount of federal, state and local funding for vocational education. Two states could itemize the federal and state funding by school, but they could not identify the local contribution. One state could identify the federal, state and local funding for area vocational/technical schools but could not do the same for other types of schools. In two states the relevant data were reported by county.

The apparent barriers to answering this EDNEED question are (1) the total local contribution is not always reported, and (2) the data are likely to be reported on a school district basis rather than by schools.

Question 7: What is the funding allocated to the school under the Vocational Education Act? (File 9, Question 23)

This question could be answered statewide by only two state agencies, both of which were responsible for postsecondary vocational education. At the secondary level, funding allocations by parts of the Vocational Education Act could not be determined below the LEA level. The exceptions to this were for area vocational/technical schools and special projects, but many such projects involve more than one school and occasionally more than one school district. Within school districts,

the allocation of federal funds to schools is, in some cases, entirely a local decision, and the state agency does not collect information on the final distribution of those funds.

Question 8: What are the school's total expenditures aggregated across curricula for vocational education? (File 9, Question 24)

Three states collected data on total school expenditures for vocational education. In two states this information was submitted in the schools' annual financial reports along with all other expenditure data; in the other state it was collected on a separate form for reporting all vocational education expenditures and requesting payment of federal funds. This latter form was completed by community colleges, vocational/technical institutes and school districts. Total expenditures by school would, therefore, be identifiable only for community colleges and vocational/technical institutes. One other state collected expenditure data at the school level, but the expenditure of local funds was not reported. In other states the reports of expenditures were at the school district or county level.

Question 9: What are the school expenditures by curriculum for vocational education? (File 9, Question 25)

Only one state collected data which enabled it to answer this EDNEED question. Total operating costs were reported by course in this state, and the summation of course expenditures within curricula would result in school expenditures by curriculum. Total operating costs

were composed of instructional salaries, other instructional expenditures, and prorated school-wide expenditures based on student credit hours.

Three major obstacles prevented the other states from answering this EDNEED question: (1) expenditures were reported by district, school program or program area rather than by curriculum; (2) only state and federal expenditures were reported at the curriculum level; or (3) only instructional salaries were identifiable by curriculum.

Topic 8: Local Education Agency Characteristics

Question 1: What are the characteristics of vocational students served by the LEA aggregated across schools? (File 10, Question 7)

Question 5 under Topic 7 focused on the characteristics of students served by the school. State agencies which could answer that question could answer this question by aggregating the school-based data to the school district level. All but one state agency could identify characteristics of vocational students served by the school, and that one state agency collected the relevant data at the school district level. Thus, all state agencies could answer this EDNEED question using either school-based or school district-based data.

While this EDNEED question could be answered in a variety of ways, the most frequently given answers referred to enrollments: total vocational enrollments, enrollments by sex, enrollments by race, enrollments of regular, disadvantaged and handicapped students, etc. As noted in Question 5, Topic 7, six states collected individualized student data and could aggregate student characteristics at the school or school district level.

Question 2: What are the sources of funding for vocational education at the LEA level? (File 10, Question 16)

Question 6, Topic 7, focused on the sources of funding for vocational education at the school level, and only one state could answer that question. At the LEA level, two states could identify the amounts of federal, state and local funding for vocational education, and in

both cases the data were for postsecondary programs, i.e., postsecondary districts.

Most of the other states could provide partial answers to this EDNEED question. In some states the funding for vocational education at the LEA level was reported in two categories, with state and local funds or federal and state funds being grouped together. In other states, federal, state and local funds were reported separately, but the reporting of local funds was not complete. More specifically, six of the ten states could not identify the total amount of local funding for vocational education at the LEA level. Thus, the difficulties in answering this EDNEED question resulted from combining funding categories and incomplete reporting of local funding.

Question 3: What is the funding allocated to the LEA under the Vocational Education Act? (File 10, Question 17)

All ten states could answer this EDNEED question. For the most part, VEA funding allocations are made to school districts; however, some VEA projects are multi-district in scope. Thus, it is relatively easy for state agencies to determine the amount of VEA funding allocated to school districts. In a few states the information needed to answer this question was presently available in computer printouts; in other states it would take a week or more to determine the VEA funding allocations for each school district. No major problems were noted in answering this EDNEED question.

Question 4: What are the employment prospects in the LEA service area? (File 11, Question 8)

Seven states collected data which could be used to answer this EDNEED question, although some of these states could provide an answer for only a limited number of LEA service areas. Five of these states had data on employment prospects classified by planning regions within their states rather than by LEA service areas, and all five used data obtained from other state or federal agencies (particularly Employment Security, Census, and State Planning offices). The other two states which could answer this question would use data submitted by the local education agencies, which could be based on local surveys, Employment Security projections, or "estimates made without valid manpower analysis." These latter estimates were to be identified as "estimation of the planner."

Under development in one state was a demand-for-labor component of the state agency management information system. This component is presently producing industry/occupation matrices for multi-county planning regions within the state, but plans are underway to produce separate I/O matrices for each county. Since counties are coterminous with LEAs in this state, they will eventually have an I/O matrix for each LEA.

Three states could identify employment prospects only statewide. One of these states, however, had expended considerable effort in developing a seven-year forecast of vocationally related job openings in the state. Utilizing the Department of Labor industry/occupation employment matrix, these statewide forecasts are intended to be used in conjunction with input from local advisory committees.

Topic 9: The Vocational Education Characteristics of the State Education Agency

Question 1: What is the total state expenditure for vocational education? (File 12, Question 2)

State agencies in six states could report the total state expenditure for vocational education. This information was generally collected on reimbursement forms submitted to the state agency. Some of these forms categorized expenditures by source of funds (i.e., federal, state and local), while others asked only for total expenditures.

States that could not answer this EDNEED question lacked information on the expenditure of local funds. In one state, for example, complete local expenditures were reported only for supplies, salaries and travel. In another state, total local expenditures were reported only by multi-county vocational/technical centers.

Question 2: What is the total vocational education revenue? (File 12, Question 5)

All ten states could identify the amount of federal and state revenue for vocational education, but only two state agencies collected data on the local revenue for vocational education. In one of these states local revenue was divided into five categories: carry-over funds from previous year, payments from other districts, sale of materials and supplies, special levy, and other local revenue. On the other state's form seven revenue categories were listed: taxes and appropriations, supply fees, registration fees, earnings from investments, donations and gifts, collections for repairs and services, and other revenue from local sources (footnote required). In two states we were

told that while they did have data on local revenue for all education, they could not break out the amount of revenue for vocational education. Thus, only the two states that collected data on the local revenue for vocational education could answer this EDNEED question, and they would do so by combining the total local revenue with the total state and federal revenue for vocational education.

DISCUSSION

A review of the problems the states encountered in answering the Project EDNEED questions reveals that the level of aggregation used for reporting purposes is often too broad to meet EDNEED requirements. This was repeatedly the case for those questions which focused on curricula and individual students. The problem appears not to be that relevant data are not being collected at the local level, but rather that the data are reported to the state agencies in aggregated form. This is especially true for data on expenditures, where program area, school or school district was more likely to be the reporting level than curriculum.

Data aggregation tends to be a one-way process. Once the reporting units (i.e., students, classes, curricula, etc.) are combined, they lose their identity to the extent that they cannot be disaggregated. Question 18, Topic 1, and Question 1, Topic 5, serve to illustrate this point. Question 18 focuses on the post-school outcomes (e.g., employment status) of curriculum completers/early leavers; Question 1 focuses on the employment status of the former student. All ten states could answer the former question, since it could be answered with data aggregated to the curriculum level. However, only six states could answer the latter question, since it required data to be reported at the student level. Data reported at the student level can later be aggregated up to the curriculum level, assuming, of course, that each student record carries a curriculum identifier; data reported at the curriculum or program level cannot later be disaggregated should the need arise.

Six of the state agencies visited had information systems which contained individualized student records. By collecting data in unaggregated form (i.e., on individual students) these states could answer the EDNEED questions which focused on individual students (Topic 5). The individualized data were aggregated by the state agencies to meet some federal reporting requirements, and, likewise, they could be aggregated to the curriculum or school level to answer student-related EDNEED questions. Furthermore, by collecting data on individual students, the state agency could perform cross-tabulations and statistical analyses which could not be performed on aggregated data. We expect that these six state agencies will have a minimum amount of difficulty in meeting the new student data requirements called for in the Education Amendments of 1976.

Another problem related to data aggregation has to do with the collection of information which is not in a format suitable for computerized storage and retrieval. In numerous instances we were told that the data needed to answer an EDNEED question were available in narrative form in program or project proposals. This information was filed, and we were told that it could be readily accessed for any particular program or curriculum. However, to access the data for all programs or curricula would be an extremely laborious task. Information which was likely to be available only in narrative format included curriculum entrance requirements, curriculum completion requirements, planned instructional outcomes, curriculum structure, curriculum evaluation procedures, and persons or groups involved in curriculum evaluation. The narrative format of such information created another problem: it was

frequently not standardized within states. For example, instructions for preparing a program or project proposal might ask the local personnel to "describe" curriculum entrance requirements, planned instructional outcomes, evaluation procedures, etc. The level of specificity in the resultant descriptions was left up to the local agency.

These aforementioned problems of data aggregation and format represent within-state difficulties in answering the EDNEED questions. When the EDNEED questions are viewed from a national perspective, another problem emerges: differences in data element definitions inhibit or preclude across-state comparisons and data aggregation. It is erroneous to assume that if two or more states can answer an EDNEED question, their answers can be meaningfully compared or aggregated. Such meaningful comparisons can be made only when uniform definitions are used by the states for data collection and reporting purposes, and at the present time there is little standardization in either the definitions or data collection procedures being used by the states. Student follow-up data (Topic 5) represent a good example of the diversity in procedures and data elements being collected by the states. Full-time employment was defined as 30 or more hours per week in one state and as 35 or more hours per week in another; one would certainly expect the former state to show a higher percentage of program completers employed full-time.

The Education Amendments of 1976, Title II, Sec. 161, mandates the development of "information elements and uniform definitions for a national vocational education data reporting and accounting system." States receiving assistance under this Act will be required to comply

with the new definitions in reporting information on vocational education students, programs, completers/early leavers, staff, facilities and expenditures. The Act calls for this information system to be in full operation for the fiscal year beginning October 1, 1977.

The results of this study have implications for the development of a national vocational education data reporting and accounting system as mandated by Title II, Sec. 161 of The Education Amendments of 1976. This system is to be based on uniform definitions of data elements and is to include information on students, programs, program completers and leavers, staff, facilities and expenditures. Judging from the variability of definitions encountered, uniformity of definitions will require extensive revision in state collection forms and practices. The stipulation that the national system include information on students can reasonably be interpreted to require that local educational agencies have the capability to store and retrieve individual student records. In many instances, this will require redesign of the current system. The requirement that information be collected and made available on programs, facilities and staff will necessitate modification of much of the current data collection procedures. Narrative information, while informative, is not well-suited to automated storage and retrieval procedures.

The notion that all that is needed is to automate the information in the school filing cabinet is not supported by our observations. To achieve the intent of Congress to produce a uniform national vocational education information system to support the

policy and planning needs at the national, state and local levels will require a major development effort. It is hoped that the present study will provide a useful input into this endeavor.

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